"Modem" Time: How Electronic Communications Are Changing Our Lives

By Anthea Tillyer

Question: What is more impressive than the pyramids, more beautiful than Michelangelo's *David* and more important to mankind than the wondrous inventions of the Industrial Revolution? (see Footnote 1 below) To the converted, there can be only one answer: The Internet, that undisciplined radical electronic communications network that is shaping our universe.

This article will give a brief outline of the history of electronic communications in general and the Internet in particular, how to join in, and what you will find in this brave new world. I will also describe ways in which electronic communications can be used for research and classroom teaching so that you and your students can benefit from the wonders of "The Net." And finally, I will hazard a few predictions on where we can expect our "electronic superhighway" (as the Internet is also called) to take us in the coming decade. However, what I cannot do, in this simple article, is impart the wonderment and fun that can overtake the Internet voyager or even the novice. A complete and exhaustive explanation of all of the possibilities for electronic enjoyment and edification would take a book; and books on the Internet already abound. Thus, this article presents for the beginner, a brief and simple overview of some of the most popular functions of the Internet, and fills in the blanks with a bibliography.

Electronic Communications

You already have experience with electronic communications: Every time you make an airline reservation or use an automatic teller machine or have your credit card verified, you are participating in an electronic communications session. A remote computer is "talking" to another computer on your behalf in order to perform some function for you. But what if computers could talk to remote people? Or if you could "talk" to remote colleagues and libraries via computer? Well, that is a reality-a *virtual* reality, as the saying goes. Not only is it possible for us to communicate instantly with people and places via computer using electronic mail (e-mail), it can also be inexpensive and simple to do. E-mail, which is the essence of the Internet, is only one of many "tools" that are appearing along the entire length of the "electronic superhighway." This highway, like others, has its potholes and hazardous turns, but it is now the quickest way to get to the people we want to "talk" to and the information we want to find. In short, while e-mail is the simplest and most immediate function of the Internet for many people, there are many other fascinating aspects of electronic communications, all of which revolve around the acquisition and transfer of information.

The industrial age has matured into the information age, wherein the means to access, manipulate, and use information has become crucial to our lives and success, both as teachers and citizens of the global village. The electronic superhighway provides an entree to libraries,

research institutions, databases, art galleries, census bureaus, and myriad other sources of data; but for those of us interested in intercultural communication, the best part about it all is that *Cyberspace* is a universal community, with instant access not just to information everywhere, but also to friends old and new around the globe.

What exactly is the Internet? A clear definition is incredibly hard to find, not least because Internet experts cannot agree among themselves. Nevertheless, most *netters* (Internet participants) will agree that the Internet is an amorphous global network of thousands of linked computers that pass information back and forth. It is the prototype National Information Infrastructure (NRI) that the Clinton administration has made the cornerstone of its technology policy for the United States.

While the Internet has no government, no owners, no shareholders, no members, no time, no place, and no country, it definitely has a culture, which frequently approaches anarchy; and it has a language, which is more or less English. The Internet is the ultimate expression of democracy in its total freedom of speech and its rule by the "people." There are still no police, censors, or enforcers, so netters are the ones who, by force of opinion, determine what is or is not acceptable behavior in Cyberspace.

Like all new worlds, Cyberspace has its own lingo, some of which you have already encountered in this article. For example, in addition to *Cyberspace* and *electronic superhighway, the net* is also increasingly referred to as the *e-bahn* and *i-way* . Other important words in Cyber-lingo are words to describe people who roam the net; netters, *e-surfers , internet surfers* are the most common. The Internet has its pejoratives, too, of course; there is, for example, the dismissive term *lurker* for the person who hangs around the *net* , reading what is there but not contributing any words. But the strongest electronic pejoratives are hurled by those who *flame* . This wonderfully descriptive term *flaming* refers to the public humiliation of another netter as punishment for a real or imagined transgression against net culture. Transgressions in a public forum (not in private e-mail, of course) include sending public mail that is off the given topic of the forum, or holding unpopular views. The most scorching flames are reserved for people who advertise a product or service for personal profit on the net; netters don't like commercialism, and they express their distaste in quite caustic flames.

History

E-mail and electronic communications in general are not new. In fact, large-scale use of computer-to-computer transfer of information was implemented by the United States military in the late 60s and early 70s--part of the superpower competition of the cold war and the arms race. The U. S. military created an electronic network (ARPANET) to use computers for handling the transfer of large amounts of sensitive data over long distances at incredible speed;computer-to-computer virtual connections, using satellites and fiberoptics, have distinct advantages over telephone or radio communications in the event of a nuclear attack. Later, recognizing that shared information among scientists and mathematicians was also of strategic value, the network was made accessible to scholars and researchers in universities and colleges around the world.

Thus, mathematicians and scientists (and their universities) have been linked and electronically exchanging information over the Internet since the mid-70s. However, e-mail and the Internet are too wonderful to remain in the hands of just a few academics or the military, and in the last few years, important developments in electronic communications have begun to affect the lives of all of us.

France was first to recognize the human value of this technology and implemented its Minitel program in 1980. With a small, simple terminal in each user's home, Minitel allows electronic access to databases of necessary consumer information, such as residential and business phone numbers and train and airline schedules. Minitel remains a monument to the proposition that science can serve society in friendly ways; however, its technology has now been overtaken by advances outside France.

In the United States, the end of the coldwar brought with it an end to the virtual monopoly of the military and scientists over the Internet. Several things then changed:

1. The Internet has become commercialized, with private and public companies offering access to it. The best-known of these international commercial electronic access providers, but by no means the only one, is Compuserve.
2. Teachers in the humanities have recognized the benefits of the Internet as a research and teaching tool, and have begun to clamor for some of the electronic communications services enjoyed by their colleagues in the sciences.
3. The current U.S. administration has made the development of the "National Information Infrastructure" a cornerstone of its domestic technology policy. The Internet is to be expanded and improved so that every home, every school, every institution, can be linked to share data, information, music, video, and other resources. The U.S. administration's position on this reflects a global awareness that the Postindustrial Age will require different thinking, different education, and a different work culture.

The Postindustrial Age is the information age, and the means to acquire, store, manipulate, and use information will lead to success and power. That is why electronic transfer of information is so important to education. Moreover, since electronic communications are global and the Internet has no borders, this technology creates many opportunities for cultural and linguistic exchange, impacting on language education and our roles as language teachers and cultural ambassadors.

How to Use Electronic Communications

While it is not hard to see that electronic communications are the wave of the future, riding this wave is more problematic. What is sure, however, is that today, you essentially need three things: a computer or a computer terminal, some kind of connection (probably modem and telephone line) to the Internet, and some kind of Internet service provider. It is also sure that

learning to use these things will present some frustrating times before they open the brave new world of the Internet.

1. Your computer: The good news is that for the purposes of electronic mail your computer does not need to be new, fancy, powerful, or expensive. And you do not need to be a computer expert to surf on the net. In fact, using a computer for electronic communication is considerably less complicated than programming a video cassette recorder (VCR). To use the Internet successfully (though perhaps not fully), it does not matter if you are using an IBM Personal Computer, a PC "clone," a MAC, or another kind of machine; all personal computers can be made to connect to the Internet. And whatever type of computer you use for the Internet can communicate with any other computerlarge or smallno matter what make, type, style, or age.

2. A modem: For most people, getting "on-line" requires a connection to a central computer elsewhere that will actually open the Internet door for you. If you can connect from your school, you will not have to worry about how the connection is made, although you might have to be concerned with sharing the equipment with several colleagues. Many universities around the world provide personal computers and terminals that are directly connected (hardwired) to a central institutional computer which hooks into the Internet. But people who become accustomed to using electronic communications, who learn how to use libraries in many countries, who join electronic discussion forums, or who correspond with friends by e-mail, find that they prefer to connect to the Internet from home. If this is the case, you need a modem, which is a small device that persuades your computer to "talk" on the phone to other computers and thus to the Internet.

Many people ask whether this means long-distance phone charges to send messages to the other side of the world. Fortunately, the user's charge is only the cost of making the call to the local computer that is Internet-connected. Regardless of where one's electronic messages are going, there is no long-distance charge for the e-mail itself.

CompuServe and other commercial services make it possible for users to access their service with local phone calls, regardless of where they are located. The costs of local connection can vary wildly, not only among countries, but also within countries, and it is important to be aware of the costs of connecting to the Internet.

3. An Internet address or provider: Even with a computer and a modem, however, the would-be Internet surfer still cannot get to the heart of things without his or her own personal Internet address or authorization to use the net. An Internet provider will supply the address; a university will provide it to teachers and students, or one can turn to a commercial provider. The telecommunications companies in many countries are working on developing Internet access for the public.

Naturally, cities are better served than rural areas, but teachers near universities (even in rural areas) can encourage the university to share their Internet access with the surrounding schools and colleges that do not yet subscribe. Electronic mail costs a university almost nothing, and the cost does not increase in proportion to the volume of use; so, asking for electronic mail access through a local university is not an outrageous request. On the other hand, the main computer at some universities is already overloaded and any more users may slow down the system for other

purposes, making the university reluctant to provide electronic mail access to teachers not on its faculty.

One unexpected obstacle to getting on-line is that it is sometimes hard to find out who in a university or department is responsible for assigning e-mail addresses to eligible staff and faculty. It is worth being persistent until you find someone who knows what e-mail is and who is a user. If no one in the humanities seems to have the information you seek, try the physics or math departments of the university. You will undoubtedly find that they have been "connected" for quite a while. Ask them how they got connected and follow their lead.

The Internet Society says that Internet connectivity is available in every country of the world, no matter how remote. However, "available" is not always the same as "easily available" or "inexpensive." It is worth looking into commercial services, which will provide excellent service for a fee. Each country has its own e-mail service provider, and new ones are appearing daily. CompuServe is one provider that is international, but others such as Delphi, MCImail, Minitel, etc., are excellent and should be considered.

Another important point about choosing an Internet provider is the question of COMPLETE Internet access. When you first start out on the net, e-mail is generally what you are most interested in. But as you get to feel at home in Cyberspace, you will probably want to access and retrieve information housed in libraries and other sources. In order to do that, you will need Internet options known as *USENET, telnet, file transfer protocol(ftp.), gopher, and World Wide Web (WWW),* which are described later in this article.

A Word About Electronic Addresses

E-mail addresses are very interesting. At first glance, they are indecipherable to a novice, but these short sets of numbers, letters, and symbols can assure their owners of e-mail from anywhere in the world. The most important symbol in an e-mail address is the @ sign, which separates the personal user's identification (user ID) on the left, from the domain, or machine address, on the right. Here's my own address as an example:

ABTHC@CUNYVM.CUNY.EDU

The part to the left of the @ is my personal user ID (**ABTHC**), which stands for Anthea B. Tillyer, Hunter College. The part immediately after the @ shows the "node" or machine. My university uses a VM machine (VM=virtual machine), so the machine address is **CUNYVM** , which means "City University of New York Virtual Machine." Then there is a dot to separate the different "domains" or "subdomains" within the address. After the dot, we have the name of the institution, City University of New York (**CUNY**), and finally we have the domain **EDU** which stands for "education." Domains can be EDU or GOV (for government) or COM (for commercial) or MIL (for military) or NET (for Internet or related network service provider) or ORG (for organization, probably non-profit). CompuServe addresses are all @compuserve.com.

What to Expect

Once our intrepid new net-surfer gets his/her e-mail address or user ID, then what? How does s/he join the fun? The best way to start surfing is to use private e-mail, sending electronic messages to friends and colleagues, across the room or across the world. One thing is sure: There will be plenty of frustration and confusion at first. Cyberspace is a new language and culture, and everyone suffers from culture-shock when they first find out that their cherished and familiar traditions do not apply in this new world. One of the most effective ways to combat Internet culture-shock and confusion is to have a friend who has gone before you into this new world and who can reply to your messages asking for help. As long as you can send messages and read the replies you receive, help is always available.

After a few sorties in the protected area of electronic mail with friends and colleagues, a foray into a newsgroup might be a good idea. Newsgroups are *bulletin boards* collections of messages from all over the world, unedited and unexpurgated, divided up by topic. There are literally thousands of newsgroups, several of which will be of at least some interest to any new user. The whole system is known as USENET or NETNEWS. USENET is one of the original Internet fun-houses, but it is not particularly easy to use or friendly to "newbies." On the other hand, USENET is a good place for the novice to start because it does not put any strain on your personal electronic mailbox with a lot of unsolicited electronic mail, because no mail comes to you. For newsgroups, the reader has to go to the group_nothing comes to the mailbox.

To access USENET or NETNEWS newsgroups on many electronic systems, a new user can simply type whichever of these two names his system uses. However, each system is different, and the new user should ask the people who run the system at his site for details on what services are available and how to access them. Unfortunately, some commercial services do not yet include NETNEWS or USENET in their offerings, but subscribers are asking for the opportunity to belong to newsgroups, and more and more commercial services are obliging.

After a time of reading newsgroups, the netter might well yearn for a more active or organized participation in the net, at which point lists are a good idea. *Lists* (also known as LISTSERVERS) are electronic discussion groups that bring together like-minded individuals to "discuss" a given topic. It is necessary for would-be readers of lists to "join" the list and become a subscriber since the mail generated by the forum (or list) only goes to members. There are lists to satisfy every taste, and if you find that there is a field without a discussion list, you are free to start your own. When you join a list, you join an international group to discuss whatever topic the list is about. If you are an English teacher, for example, you will want to join *TESL-L* for ESL/ EFL teachers, described in more detail on the next page.

It is good to join lists slowly, though, one at a time, because lists send mail to your personal mailbox (unlike newsgroups) and the mail can add up. Some, like TESL-L generate 50 or more messages a day. How to join lists is outlined in more detail below.

What Else is on the Internet?

The essence of the Internet lies in two broad categories of communication: person-to-person; and person-to-data:

1. Person-to-person electronic communication: This can be a one-to-one format, as in private messaging via electronic mail. If I have a question about style or content for this article, I can send off a quick message to the *FORUM* editor without ever leaving my Windows program. If I am not here when his message arrives, it will simply wait in my "electronic mailbox" until I pick it up.

TESL-L (Teachers of English as a Second Language Electronic List) is an electronic discussion forum that unites teachers and researchers in our profession giving them the chance to exchange ideas and challenges. As of this writing (April, 1995) TESL-L has about 7000 members in 79 countries and is growing daily. The teachers in the group communicate by e-mail, and they can choose whether their message will be sent to one or two other people or to the whole group.

Members of *TESL-L* liken it to a huge international teachers' lounge in that it is a community of teachers who support, help, inform, and amuse each other. If, for example, I wanted a reference for the bibliography at the end of this article, I could send out a message on the net asking for help. Within minutes, even seconds, I would have several helpful and informed replies to speed my bibliography on its way. In addition to the daily "talk" on the Net, *TESL-L* has an extensive archive of TEFL/TESL materials and articles, all of which can be downloaded (retrieved) remotely 24 hours a day through your computer. The Internet has thousands of groups or lists like *TESL-L* , each focusing on some vocation or avocation of interest. All these groups are run at no cost to members through the volunteer efforts of the founders and the donated machine time of their institutions. Some of the professional discussion forums like *TESL-L* are supported by grants from public and private institutions. To get a list of all the available lists, send electronic mail to:

LISTSERV@LISTSERV.NET

As the entire text of your message, type:

LIST GLOBAL

You will then receive the complete (and long!) list of *lists* by electronic mail. If you prefer to receive a more focused list, then you can ask for a list of only those forums that deal with the topics you are interested in. The message that you send to LISTSERV@LISTSERV.NET will then look like this:

LIST GLOBAL /topic

For example : **LIST GLOBAL/language**

To join any of the lists that appeal to you, you send an electronic message to the *LISTSERV* at the address of the list. For example, the address of TESL-L is

TESL-L@CUNYVM.CUNY.EDU

so @CUNYVM.EDU is the address of the *LISTSERV* to which one must write in order to join *TESL-L* . After addressing the message to the *LISTSERV* , the would-be subscriber types four words:

SUB TESL-L first-name last-name

For example : **SUB TESL-L John Doe**

Because "lists" are essentially just e-mail, they are accessible to commercial service users as well as more "traditional" Internet surfers.

2. Person-to-data electronic communication: The Internet is a veritable storehouse of data; the amount of information available is quite extraordinary and growing every day. Some of it is practical and time-sensitive, and some is more conventional and timeless. For example, you can arrange for the day's transcripts of CNN broadcasts to be "delivered" to your electronic mailbox daily, together with timely classroom ideas and exercises. In seconds, you can access any of the great libraries in universities to create bibliographies, check references, or obtain articles. Or, for another example, you can retrieve the complete text of *Rip Van Winkle* from Colorado, language teaching software from Australia and Hong Kong, crime or hunger statistics from the United Nations. And, using advanced equipment, you can see true-motion video of a remote art museum or heart surgery. And all of this is done in seconds.

The information you need is there, and the Internet has the tools to help you locate what you want and then retrieve it. For locating entries in information storage centers around the world, one of the easiest and more interesting "tools" is *GOPHER* . This handy little fellow will happily offer you the data that you are looking for, or tell you where to find it. Certain "gopher holes" (universities) specialize in particular kinds of information. For example, if you are interested in materials related to teaching English, you will want to check out the TESL/TEFL gopher at the City University of New York. When you have acquired some confidence and skills on the Internet, find gopher CUNYVM.CUNY.EDU; then select Subject Specifics Gophers; and then Teaching English as a Second or Foreign Language. After that, make your own selections. If you are not sure that you have access to gopher, try typing the word GOPHER at your e-mail system prompt, you might be pleasantly surprised to find that you can just step into gophering.

Another data-retrieval tool on the Internet is *ftp* (file transfer protocol), which is one of the original Internet tools and therefore not particularly user-friendly. It is worth learning to use this method of obtaining articles, data, and even whole books (in plain text) from the Internet, but ftp takes time and patience to learn and you need special access to it.

The newer Internet tools like Mosaic and *World Wide Web* are easier to use than the older methods (such as ftp) and allow the user access to color, graphics, full-motion video, and so

forth. The disadvantage of these new resources is that, unlike gopher and ftp, *Mosaic* , and *World Wide Web* require fairly sophisticated equipment that most users (and many universities) do not have yet. It may be many years before the regular Internet surfer will routinely be able to use these wonderful tools from home.

Using Electronic Communications with Students

Internet is there for students of course; and language teachers will find that it offers them opportunities for innovation and creativity. If you can arrange for Internet access for your students, either on an individual basis or as a class group, they can be involved in electronic pen-pal arrangements with students in many other countries. The speed of electronic communications ensures swift replies for writers, which of course, motivates them to write even more.

It is also possible to arrange for your students to work with student groups at other schools on specific projects. For example, each group might do some research on the Internet and then collaborate to produce a report. The writing required for the students to collaborate effectively in projects like this will provide useful practice. And e-mail requires reading as well as writing.

All the research tools and activities described previously are available to students. You can organize scavenger hunts, races, quizzes, and research assignments on the Internet. Students can join lists and read newsgroups.

These are merely a brief overview of some of the many Internet teaching strategies that teachers are trying in language classrooms around the world. One of the important functions of the *TESL-L* electronic forum is to give teachers a chance to share ideas for using this technology to enhance language teaching. It is convenient and reassuring to be able to ask questions and glean ideas from your peers on the network. In addition, the *TESL-L* archives are rich with articles and reports about using Internet tools and resources with students.

Conclusion

There is no doubt that we are in the middle of a communications revolution that will deeply affect our lives, our teaching, and our students. We have available to us at a keystroke the libraries, schools, and people of the world. Fairly soon, many people will be able to access unimaginable resources of entertainment and professional edification right from home. As more people start to use the Internet, ways will be found to make it simpler to use and even more impressive as a repository of knowledge and ideas.

Truly, this is a revolution that might well be "more important to mankind than the wondrous inventions of the Industrial Revolution." If we don't learn to use the Internet and all its resources, we run the risk of shortchanging ourselves and our classes. But most of all, we run the risk of losing out on the excitement and fun of the brave new world, the Internet.

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Footnote 1

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